

## WHAT IS CLAIMED IS:

1. A computer-implemented method of video conferencing for digitally illuminating an object in real-time, comprising the steps of:

capturing an image of an object;

providing at least a virtual light source for illuminating the object within said image;

extracting a surface position of said object within said image;

illuminating said object at least at the extracted surface position with the virtual light source; and

displaying the illuminated object within said image.

2. The method of claim 1, further comprising a step of creating a two-dimensional plane of the object within the image.

3. The method of claim 2, further comprising a step of illuminating the two-dimensional plane with the virtual light source.

4. The method of claim 3, wherein the step of illuminating said object includes a step of combining a diffused light component with a specular lighting component.

5. The method of claim 1, further comprising a step of tracking movement of said object for obtaining position information.

6. The method of claim 5, further comprising a step of creating a three-dimensional model of said object based on the position information.

7. The method of claim 6, wherein said three-dimensional model is an ellipsoid.

8. The method of claim 6, further wherein said step of displaying said object further includes using a texture mapper.

9. The method of claim 1, wherein said step of illuminating said object at least at the extracted surface position includes applying a virtual illumination equation.

10. A method of selectively illuminating a user of an image processing system in real-time, comprising the steps of:

capturing an image of a head portion of the user;

dynamically determining a three-dimensional position of the head portion of the user;

generating a surface model of the head portion of the user based on said three-dimensional position;

applying a synthetic light to the surface model based to form an illuminated model; and

combining the illuminated model and the image.

11. The method of claim 10, wherein the step of dynamically determining includes a step of tracking the position of the head portion of the user.

12. The method of claim 11, wherein the step of generating the model includes a step of generating an ellipsoid being representative of the head portion of the user.

13. The method of claim 12, wherein the step of applying the synthetic light includes a step of illuminating the ellipsoid with a lambertian lighting component and a specular lighting component.

14. The method of claim 13, further comprising the step of displaying the combined image.

15. The method of claim 11, further including tracking a plurality of facial features of the head portion of the user.

16. A method of illuminating a head of a user for a video processing system in real-time, comprising the steps of:

capturing an image of the head of the user;

dynamically tracking the position of the head of the user;

generating a three-dimensional model of the head of the user;

applying at least one virtual light to a dynamic position on the three-position model to form an illuminated model; and

rendering the illuminated model and the image.

17. The method of claim 16, wherein the step of dynamically tracking includes a step of tracking a plurality of facial features of the head of the user.

18. The method of claim 17, wherein the step of generating a three-dimensional model includes a step of generating an ellipsoid representative of the head of the user.

19. The method of claim 16, wherein the step of applying at least one virtual light includes a step of illuminating said dynamic position given by a virtual illumination equation.